Space Weather Forecast

Issued on Friday, 09 August 2024 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Moderate solar activity expected. Occasional Minor to moderate geomagnetic storms likely, mainly Days 2 and 3 (10 and 11 Aug).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: High solar activity with one Strong flare plus several Moderate class flares through the period, these all from a region in the southwest which is modest in size and has relatively simple magnetic complexity There are ten sunspot regions on the visible disc, of which eight are numbered. All of the regions on the disc where either stable or showed very slight changes over the past 24 hours. Most are geomagnetically simple, although two regions are moderately complex.

Solar Wind / Geomagnetic Activity: Slow wind conditions persisted through the period. Interplanetary Magnetic Field was Weak while the north-south component was Weak and variable in direction. Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue, with occasional Moderate-class flares expected and a chance of isolated Strong-class flares. Most of this activity is expected from the region in the southwest, but new or returning regions are expected to rotate onto the visible disc to help contribute.

Solar Wind /Geomagnetic Activity: A previous CME (Coronal Mass Ejections) from Aug 7th is expected to have an Earth-directed componentwith arrival on Day 2 (10 Aug) expected. Another CME which left the Sun on 07 Aug is expected to pass close later on Day 2 (10 Aug), with glancing impacts possible. The CME associated with the Strong flare on the 8th has not been analysed yet, but is likely to have an Earth directed component, and is also likely to be fast. Potentially the CME could arrive later day 2 or through day 3 (11th). These CMEs combined with the possible arrival of a weak HSS from CH57 increases the chance of Minor to Moderate geomagnetic storms through the period. Outside of any CME influence background slow-ambient winds are expected.

Geomagnetic activity is expected to be mostly Quiet initially, with a chance of isolated Unsettled intervals. From day 2 onwards occasional Minor to Moderate Storms periods are expected, with a slight chance of G3/Strong storms, especially days 2 and 3.

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist around background levels, but with a chance of further enhancement given the occurrence of any notable flares. This gives a slight chance of reaching or exceeding the S1 Minor Radiation Storm level.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	80	60	10
Strong	G3	No	1	20	5	1
Severe	G4	No	1	5	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	80	80	80
Very Active	R3 to R5 X	Yes	25	25	25	25

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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